DES-3200-28P ver. A1

24 Port PoE 10/100Mbps + Power Over Ethernet +
2 10/100/1000BASE-T +
2 Combo 10/100/1000 BASE-T / 100/1000 SFP

DES-3200-52 ver. A1

48 Port 10/100Mbps + 2 100/1000 SFP +
2 Combo 10/100/1000 BASE-T / 100/1000 SFP

DES-3200-52P ver. A1

48 Port PoE 10/100Mbps Power Over Ethernet +
2 10/100/1000BASE-T +
2 Combo 10/100/1000 BASE-T / 100/1000 SFP

Layer 2 Management Switch

Version 1.0
Date: 2011/09/16

Revision History:

Version	Date	Name	Content Revised
1.00	2011/09/16	Jessica Huang	First Edition

Product Description

DES-3200-28P/52/52P aims to replace DES-3028P/52/52P to enhance product competitiveness. Compared to DES-3028P/52/52P, DES-3200-28P/52/52P have advanced Hardware and Software features such as 16K Mac address table, 6KV surge/lightning protection in Ethernet ports, 802.3at(PoE+) for DES-3200-28P/52P, IPv6 support.

1 Product Specifications:

1.1 Hardware Specifications

General	
Dimension	19-inch, 1U Rack-mount size - DES-3200-28P: 441mm X 308mm X 44mm - DES-3200-52: 441mm X 308mm X 44mm - DES-3200-52P: 441mm X 380mm X 44mm
Weight	DES-3200-28P: TBD kg DES-3200-52: TBD kg DES-3200-52P: TBD kg
Operation Temperature	-5-50˚C
Storage Temperature	-40-70˚C
Operation Humidity	10%-90% RH
Storage Humidity	5% ~ 90% RH
Operation Altitude	Up to 2000 M
Heat Dissipation	DES-3200-28P: TBD BTUs per hour DES-3200-52: TBD BTUs per hour DES-3200-52P: TBD BTUs per hour
Acoustic	DES-3200-28P: TBD dB DES-3200-52: TBD dB DES-3200-52P: TBD dB
MTBF	DES-3200-28P: TBD Hour DES-3200-52: TBD Hour DES-3200-52P: TBD Hour
Default Baud Rate	115,200
Power Consumption	DES-3200-28P: Maximum power consumption: 250.78 Watts Standby power consumption: 24.4 Watts DES-3200-52: Maximum power consumption**:** 30.09 Watts Standby power consumption: 19.3 Watts DES-3200-52P: Maximum power consumption:471.6WWatts Standby power consumption: 31 Watts
Performance	
Switching Capacity	DES-3200-28P: 12.8Gps DES-3200-52: 17.6Gps DES-3200-52P: 17.6Gps
64-byte Max. Forwarding Rate	DES-3200-28P: 9.5 million packets per second DES-3200-52: 13.1 million packets per second DES-3200-52P: 13.1 million packets per second
Forwarding Mode	Store and Forward
Key Component	
CPU	400MHZ
SDRAM for CPU	128M DDR2

Flash Memory	32MB
Packet Buffer	1.5 MB
FAN	DES-3200-28P: smart fan 1. Fans are capable to adjust speed based on system temperature. 2. Alert alarm if fan running at abnormal speed. 3. Default : Low speed (TBD RPM) 4. When internal temperature detected by the sensor goes over TBD ℃(external temperature may be around TBD ℃), the fan speed will automatically change to high speed (TBD RPM). 5. When internal temperature detected by the sensor goes below TBD ℃(external temperature may be around TBD ℃), the fan speed will automatically change to low speed (TBD RPM). DES-3200-52: smart fan 1. When internal temperature detected by the sensor goes over 25℃(external temperature may be around 23℃), the fan speed will automatically change to high speed (TBD RPM). 2. When internal temperature detected by the sensor goes below 25℃(external temperature may be around 23℃), the fan speed will automatically change to low speed (TBD RPM). DES-3200-52P: smart fan 1. Fans are capable to adjust speed based on system temperature. 2. Alert alarm if fan running at abnormal speed. 3. Default : Low speed(TBD RPM) 4. When internal temperature detected by the sensor goes over TBD ℃(external temperature may be around TBD ℃), the fan speed will automatically change to high speed (TBD RPM). 5. When internal temperature detected by the sensor goes below TBD ℃(external temperature may be around TBD ℃), the fan speed will automatically change to low speed (TBD RPM).
Power Features	
Internal power supply	DES-3200-28P : 253W AC Input: 100 – 240 VAC, 50-60 Hz DES-3200-52: 40W AC Input: 100 – 240 VAC, 50-60 Hz DES-3200-52P : 589W AC Input: 100 – 240 VAC, 50-60 Hz
Green	
RoHS	Compliant with RoHS 6
Port Function	
Console port	1. RJ-45 interface for out-of-band CLI configuration
10/100BASE-TX ports	24 x 10/100BaseT PoE ports for DES-3200-28P 48 x 10/100BaseT PoE ports for DES-3200-52 48 x 10/100BaseT PoE ports for DES-3200-52P Compliant to following standards: - IEEE 802.3 compliance - IEEE 802.3u compliance Support Half/Full-Duplex operations - IEEE 802.3x Flow Control support for Full-Duplex mode - Back Pressure for Half-Duplex mode - Head-of-line blocking prevention Support manual/auto MDI/MDIX configuration
SFP Ports	Port 51 ~ 52 in DES-3200-52 Comply with following standards: - IEEE 802.3u compliance (Support 100M transceivers)

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	- IEEE 802.3z compliance Supported SFP Transceivers: 1. DEM-210 (100Base-FX, Multi-mode, 2km) 2. DEM-211 (100Base-FX, Single-mode, 15km) 3. DEM-310GT (1000Base-LX, Single-mode, 10km) 4. DEM-311GT (1000ase-SX, Mutli-mode, 500m) 5. DEM-312GT2 (1000Base-SX, Multi-mode, 2km) 6. DEM-314GT (1000BASE-LHX, Single-mode, 50km) 7. DEM-315GT (1000BASE-ZX, Single-mode, 80km) Supported WDM transceiver 1. DEM-220T (100BASE-FX, Single-mode, 20km, TX-1550/RX-1310nm) 2. DEM-220R (100BASE-FX, Single-mode, 20km, TX-1310/RX-1550nm) 3. DEM-330T (1000BASE-LX, Single-mode, 10km, TX-1550/RX-1310nm) 4. DEM-330R (1000BASE-LX, Single-mode, 10km, TX-1310/RX-1550nm) 5. DEM-331T (1000BASE-LX, Single-mode, 40km, TX-1550/RX-1310nm) 6. DEM-331R (1000BASE-LX, Single-mode, 40km, TX-1310/RX-1550nm) Support 1000Base-T transceiver: 1. DGS-712 (1000Base-T,100m)
Combo ports	Support 10/100/1000BASE-T / 100/1000 SFP ports 1000Base-T ports compliant to following standards: - IEEE 802.3 compliance - IEEE 802.3u compliance - IEEE 802.3ab compliance Support Half/Full-Duplex operations - IEEE 802.3x Flow Control support for Full-Duplex mode - Back Pressure for Half-Duplex mode - Head-of-line blocking prevention Support manual/auto MDI/MDIX configuration SFP Transceivers Supported: - DEM-310GT (1000BASE-LX) - DEM-311GT (1000BASE-SX) - DEM-314GT (1000BASE-LHX) - DEM-315GT (1000BASE-ZX) - DEM-312GT2 (1000BASE-SX) - DEM-210 (100BASE-LX) - DEM-211 (100BASE-LX) WDM transceiver Supported: - DEM-330T (TX-1550/RX-1310nm), up to 10km, Single-Mode - DEM-330R (TX-1310/RX-1550 nm), up to 10km, Single-Mode - DEM-331T (TX-1550/RX-1310 nm), up to 40km, Single-Mode - DEM-331R (TX-1310/RX-1550 nm), up to 40km, Single-Mode - DEM-220T (TX-1550/RX-1310 nm), up to 20km, Single-Mode - DEM-220R (TX-1310/RX-1550 nm), up to 20km, Single-Mode Compliant to following standards: - IEEE 802.3z compliance - IEEE 802.3u compliance
PoE Capability	
PoE Capable Ports	DES-3200-28P: Port 1~24

	DES-3200-52P: Port 1~48
Maximum Power Budget	DES-3200-28P: 1. Port 1 ~ 4: 30W (Support PoE+) 2. Port 5-24: 15.4W (Support PoE) 3. Max 188 W PoE power budget per device DES-3200-52P: 1. Port 1~8:30W (Support PoE+) 2. Port 13-48: 15.4W (Support PoE) 3. Max 370W PoE power budget per device
PoE Specification	1. Compliant with IEEE 802.3af/802.3at PoE standard. 2. Automatically discover the connection of PD device and immediately sends power to it 3. Auto disable port if the port current is over 350mA or short happens. 4. Providing power following the classification below Class — Max power send by PSE — Max power receive by PD 0 — 15.4W — 0.44 to 12.95W 1 — 4.0W — 0.44 to 3.84W 2 — 7.0W — 3.84 to 6.49W 3 — 15.4W — 6.49 to 12.95W 4 — 15.4W (af) 15.4W ~ 30W (at) — 0.44 to 12.95W (af) 12.95W to 30W (at) 5. Follow the standard PSE pin-out standard of Alternative A which is sending out power over number 1,2,3,6 pins of 8 wires of CAT5 UTP cable Pin — Signal Description 1 — Receive+ & Power- 0V 2 — Receive- & Power- 0V 3 — Transmit+ & Power+ +48V 4 5 6 — Transmit- & Power+ +48V 7 8

1.2 Software Features

Features	Detailed Description	Standard	Release
Stackability			
Virtual Stacking / Clustering	1. Support D-Link Single IP Management v1.73 2. Use a single ip to manage the virtual stack with up to 32 D-Link xStack devices 3. Support IPv4 address		R4.00
	4. Support IPv6 address		TBD
L2 Features			
MAC Address	1. Support **16K** MAC address table 2. Support **512** static MAC addresses 3. Support black hole MAC address 4. Support max **256** static L2 multicast addresses which share 2K addresses with both IGMP snooping groups and MLD snooping groups		R4.00
Flow Control	1. 802.3x when full duplex 2. Back Pressure when half duplex 3. Head-of-line blocking prevention		R4.00
Jumbo Frame	Up to **12K** Bytes		R4.00
Spanning Tree	1. Support 802.1D STP 2004 edition 2. Support 802.1w RSTP 3. Support 802.1s MSTP 4. Support 8 MSTP Instances 5. Support per port / VLAN / device BPDU filtering		R4.00

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	6. Support Root Restriction(defined in 802.1Q-2005)		
	7. Support **64** MSTP Instances		R5.00
Ethernet Ring Protection Switching (ERPS)	1. Support Single Ring ERPS	ITU G.8032	R4.00
	2. Multiple Ring ERPS,	ITU G.8032	R5.00
Loopback Detection(LBD)	1. D-Link Loopback Detection 4.03 (latest) 2. STP independent 3. Per port/VLAN shutdown when there is a loop detected.		R4.00
Link Aggregation	1. Comply with 802.1AX and 802.3ad 2. max group per device: DES-3200-28P : support max **14** groups per device DES-3200-52 : support max **26** groups per device DES-3200-52P : support max **26** groups per device 3. Support **8** ports per group 4. High availability LACP to prevent single or multiple ports failure in an aggregation channel. 5. Support load sharing mechanisms： - Source MAC, destination MAC, VLAN, EtherType, - Source IP, destination IP, source + destination IP - TCP/UDP ports	IEEE 802.3ad IEEE 802.3AX	R4.00
Mirroring	1. Port Mirroring - Support **1** mirroring group - One-to-one port mirroring - Many-to-one port mirroring - Port mirroring for Tx/Rx/Both 2. Flow-based (ACL) mirroring		R4.00
	3. RSPAN		R5.00
L2 Protocol Tunneling (L2PT)	Support tunnels for the following protocols across the service provider's networks - GVRP - STP - Protocol MAC Type: 01000CCCCCCC, 01000CCCCCCD		R4.00
L2 Multicasting			
L2 multicast table			R4.00
L2 Multicast Filtering	Support L2 multicast filtering modes as below - Forward all groups - Forward all unregistered groups - Filter all unregistered groups		R4.00
IGMP snooping	1. Support IGMP v1, v2, v3 awareness 2. **1024** IGMP snooping groups (shared with MLD Snooping Group and static L2 multicast address) 3. Be able to forward the multicast traffic from the multicast-enabled router only 4. Be able to forbid multicast traffic on specific ports (can config forbid_mc_router) 5. Per VLAN IGMP snooping 6. Support port/host-based IGMP Snooping fast leave 7. Support Report Suppression. When IGMP report suppression is enabled, the switch sends the first IGMP report from all hosts for a group to all the multicast routers. The switch does NOT send remaining IGMP reports for the group to the multicast routers. This feature prevents duplicate reports from being sent to the multicast devices 8. Support Data Driven Learning so the switch will build up the entry	RFC2236 RFC3376 RFC4541	R4.00

	in its multicast table when sniffing the multicast traffic from the media server. Typically used in an environment where the multicast server is connected to the switch directly. 9. Support the configuration of maximum allowed multicast groups. 10. Support static IGMP snooping groups 11.Support max **24** Profile ID 12. Support max 128 group Range Number in a Profile ID 13. Support max TBD profile per port 14. Support max TBD multicast address per port		
IGMP Authentication	1. Check the validity of client's MAC address, Switch IP , Port, and Multicast group IP 2. Only the authenticated port can join IGMP group		R4.00
Limited IP Multicast (IGMP Filtering)	1. Filter IGMP join packets 2. Support **24** profiles per system 3. Support port/VLAN based filtering. Each port/VLAN can bind up to 24 profiles independently. 4. Support up to **128** IP multicast group ranges per profile 5. Support IPv4 6. Support replace or drop action while exceed the max multicast group		R4.00
	7. Support IPv6		R5.00
Proxy Reporting	1. Proxy-reporting for multicast VLAN 2. Support IGMP/MLD proxy reporting		R5.00
MLD snooping	1. Support MLD v1, v2 awareness 2. 1024 MLD snooping groups. (shared with IGMP Snooping Group and static L2 multicast address) 3. Be able to forward the multicast traffic from the multicast-enabled router only 4. Be able to forbid multicast traffic to specific ports (can config forbid_mc_router) 5. Per VLAN MLD snooping 6. Support host-based MLD fast leave 7. Support Data Driven Learning so the switch will build up the entry in its multicast table when sniffing the multicast traffic from the media server. Typically used in an environment where the multicast server is connected to the switch directly.	RFC4541	R4.00
VLAN			
VLAN Group	1. Total **4094** VLAN groups; 2. Configurable vid from **1~4094** 3. Configurable TPID		R4.00
GVRP	1. Support **255** dynamic VLAN groups 2. GVRP advertisement both on dynamic and static VLAN 3. GVRP can be enabled/disabled by per port/VLAN/system basis		R4.00
802.1Q	Support 802.1Q 2005 edition		R4.00
Port-based VLAN	1. Support VLAN tagging based on PVID 2. Support VLAN classification based on default port priority		R4.00
802.1v Protocol VLAN	1. Support up to **16** protocol-based VLAN 2. Support **16** protocol-based VLAN per physical port 3. Be able to configure 802.1Q and 802.1v untagged port on same physical port 4. Support multiple VLANs for each protocol 5. Support VLAN classification based on ether type	RFC4363	R4.00
Double VLAN (Q in Q)	1. Support Port-based Q-in-Q 2. Add SVLAN tag to either untagged or single tagged packets and generate double tagged packets 3. Support Selective Q-in-Q. Add SVLAN based on - MAC address - PVID (for untagged packets only) - CVLAN tag		R4.00

	- 802.1p priority - IP Address - Ether type -IPv4/IPv6 Address - TCP/UDP port number 4. Support untagged / single tagged / double tagged at same physical port UNI Port: • For packets ingress from UNI port, the packet can be untagged, or CVLAN tagged • Based on user configuration, SVLAN tag can be added to the packet, or CVLAN tag be replaced with SVLAN tag • The learning and forwarding is based on SVLAN. NNI Port: • For packets ingress from NNI, it can be untag, or single SVLAN tag, or double tags. The switch's learning and forwarding is based on SVLAN. (CVLAN tag is identified by CVALN TPID. SVLAN tag is identified by SVLAN TPID.) 5. Insert CVLAN tag if the packet is recognized as without CVLAN tag. 6. Per port configurable SVLAN TPID 7. Per port configurable CVLAN TPID 8. Support **4** SVLAN TPID		
VLAN Translation	1. Single tag Replace VLAN tag based on - Physical port - ACL - Original VLAN tag 2. Double tag a. Support CVLAN translation based on - Physical port - ACL b. Support SVLAN translation based on - Physical port - ACL - CVLAN tag 3. Support up to **1024** entries/rules		R4.00
Voice VLAN	Support D-Link Voice VLAN v2.0		R5.00
MAC-based VLAN	Support up to **1K** entries		R4.00
ISM-VLAN	1. Support up to **3** dedicated ISM VLANs 2. Be able to filter unknown multicast packets per ISM VLAN 3. Support tagged and untagged members while the port still belongs to: - Port-based VLAN - 802.1Q VLAN whose VID is different from ISM VLAN 4. The IGMP snooping function in ISM VLAN is independent from global IGMP snooping 5. Support IGMP v1/v2/v3 6. Support up to **80** ISM profiles per system, each ISM VLAN can bind up to **16** profiles 7. Each ISM profile can support up to **32** address ranges 8. Source ports can be untagged 9.Support the modification of ISM VLAN's priority level for better traffic control 10. Support the configuration of multiple ISM VLAN source ports on the switch. When working with STP , it will allow the forwarding of multicast stream using backup 11. Configurable Multicast VLAN priority 12. Tag/Untagged source and member ports		R4.00

	13. Support the configuration of multiple ISM VLAN source ports		
	14. Support ISM VLANv6		R5.00
Private VLAN			R5.00
VLAN Trunking	Allow a physical network interface to carry and pass multiple tagged VLAN traffic so different VLAN information can be exchanged between switches		R4.00
L3 Feature			
ARP	1. Max **1024** ARP entries 2. Support **255** static ARP entries 3. Support Gratuitous ARP 4. Support IPv4 Address		R4.00
	5. Support IPv6 Address		TBD
IPv6 Neighbor Discovery (ND)	1. Max **512** ND entries 2. Support up to **128** static ND entries		R4.00
Default Route	Support IPv4/v6 address		R4.00
QoS (Quality Of Service)			
Priority Queue Mapping	Be able to prioritize packets according to: - 802.1p Priority		R4.00
	- Differentiated Services Code Point (DSCP)	RFC2475	
Number of Queues	**8** Queues per port		R4.00
Queue handling	Support following mode - Strict - Weighted Round Robin (WRR) - Strict + WRR		R4.00
	Support following mode - Deficit Round Robin (DRR)		R5.00
	- Configurable default 802.1p priority on each port - Scheduling mechanisms (strict or WRR) can be configured on a per port basis		R4.00
Class of Service	Be able to classify packets according to following contents: - 802.1p priority - VLAN ID - MAC address - Ether type - IPv4/v6 address - TOS - DSCP - Protocol type - TCP/UDP port number - IPv6 Traffic Class - IPv6 flow label - User defined packet content	RFC2475	R4.00
QoS Flow Actions	Support following actions for flows - Remark 802.1p priority tag - Remark TOS/DSCP tag - Bandwidth Control	RFC2597 RFC2598	R4.00
Three Color Marker	1. Support Two Rate Three Color Marker (trTCM) - CIR/PIR minimum granularity: **8** kbps - Support CBS/PBS	RFC2697, RFC2698	R4.00

	2. Support single rate three color marker (srTCM) - CIR minimum granularity: **8** kbps - Support CBS/EBS		
Congestion control	Support following congestion control mechanism: - Simple Random Early Detection (SRED)		R5.00
Bandwidth Control	1. Port-based bandwidth control - Minimum granularity: **8** Kb/s - Ingress / Egress bandwidth control 2. Flow-based bandwidth control - Minimum granularity: **8** Kb/s - Ingress / Egress bandwidth control 3. Per queue bandwidth control - Minimum granularity: **8** Kb/s - Per egress queue bandwidth control - Per egress queue bandwidth guarantee		R4.00
Time-based QoS			R4.00
ACL (Access Control List)			
Maximum ACL Entries	1. Max **4** ingress ACL profiles, **1024** ingress ACL rules in best case scenario 2. Each rule can be associated to a single port, multiple ports		R4.00
MAC Access List	1.Support TBD MAC ACLs 2. Support max TBD rules per MAC ACL 3. Support following packet contents: - 802.1p priority - VID - Source/Destination MAC address - Ethernet type - LLC		R4.0
IP Access List	1. Support TBD IP ACL 2. Support max TBD rules per IP ACL 3. Support standard and extended IP ACL configuration 4. Support following packet contents: - Source/Destination IP Address (Standard/extended) - DSCP (Extended) - Protocol type (Extended) - TCP/UDP port number (Extended) 5. Standard IP ACL is able to bind different protocol types.		R4.0
IPv6 Access List	1. Support TBD IPv6 ACL 2. Support max TBD rules per IPv6 ACL 3. Support following packet contents: - Source/Destination IP address - DSCP - Protocol type - TCP/UDP port number - IPv6 Traffic Class - IPv6 flow label		R4.0
User-defined Access List	1. Support TBD User-defined ACL 2. Support max TBD rules per User-defined ACL 3. Lookup any **16** Bytes among the first **128** bytes of packets.		R4.0
ACL Policy	Support following ACL policy packet contents: - Switch port - MAC address - 802.1p priority - VLAN ID - TOS - DSCP - IPv4/v6 address - Protocol type - TCP/UDP port number		R4.00

	- IPv6 traffic class - IPv6 flow label - User Defined Packet Content		
ACL Statistics	1. Support max. TBD counters per system for ACL/QoS statistics 2. Support TBD bit counter		R4.00
Time-based ACL			R4.00
CPU interface filtering	Support **5** profiles, **100** rule per profile		R4.00
Security			
SSH	1. Support SSH v1, v2 2. Support IPv4 protocols 3. Allows the configuration of SSH port to any desired port number 4. Support **8** management session simultaneously		R4.00
	4. Support IPv6 protocol		R5.00
SSL	1. Support v1/v2/v3 2. Support IPv4 protocol	RFC2246	R4.00
	3. Support IPv6 protocol		R5.00
Port Security	1.Support **64** MAC addresses per port 2.Support xxx MAC addresses per device		R4.00
Unicast/Broadcast /Multicast Storm Control	1. Be able to set up a storm threshold. When broadcast / multicast / DLF unicast or multicast traffic hit the defined threshold, the switch will start blocking or discarding packets which would otherwise 'flood' the network. The blocked port will be activated again only when the broadcast/ multicast traffic falls below the defined threshold. 2. Min granularity: **8** kbps 3. Allows the configuration of **5** minutes recovery timer for shutdown ports		R4.00
Traffic Segmentation			R4.00
IP-MAC-Port Binding	1. Support D-Link IMPB v3.9 2. Support **500** address binding entries per device 3. ARP mode - ARP Packet Inspection 4. ACL mode - ARP Packet Inspection - IP Packet Inspection 5. Support IPv4 DHCP Snooping		R4.00
	6. IMPB supports IPv6 address 7. Support IPv6 DHCP Snooping 8. Support IPv6 ND Snooping		R5.00
D-Link Safeguard Engine	1. System will send the trap and log the event when CPU utilization hits the defined threshold 2. Protect CPU from Broadcast / Multicast / Unicast flooding 3. System will send the trap and log the event when CPU utilization hits the defined threshold 4. Protect CPU from Broadcast / Multicast / Unicast flooding		R4.00
NetBIOS/NetBEUI filtering	Support IP & non-IP (802.3) mode (Default : IP mode)		R4.00
DHCP Server Screening	1.Support max. **100** Permit DHCP Server/Client entry 2.Support IPv4 address		R4.00
	3. Support IPv6 address		TBD
DHCP client filtering	1.Support IPv4 address		R4.00
	2.Support IPv6 address		TBD
ARP Spoofing Prevention	1. Support **256** entries 2. Support IPv4 address		R4.00
	3. Support IPv6 address		TBD

BPDU Attack Protection			R4.00
DoS Attack Prevention			R4.00
L3 Control Packet Filtering	1. Allow designation of a port or range of ports as being forbidden to multicast-enabled routers. Can sblock DVMRP, PIM, IGMP Querier, OSPF, RIP, or VRRP traffics. 2. Support IPv4 address		R4.00
	3. Support IPv6 address		TBD
AAA			
802.1X	1. Support local/RADIUS database - Maximum **16** MACs per port when using local database - Maximum **128** MACs per device when using local database - Maximum **16** MACs per port when using RADIUS database - Maximum **16X(port number)** MACs per device when using RADIUS database 2. Support Port-based Access Control 3. Support Host-based Access Control 4. Be able to configure 802.1X packet transparency / filtering when 802.1X is disabled 5. Support EAP, OTP, TLS, TTLS and PEAP 6. Support MD5 authentication 7. Be able to force the 802.1X client to be off-line 8. Support 802.1X session timeout attribute 9. Identity driven policy assignment: Can assign **VLAN, ingress/egress bandwidth control, ACL and 802.1p default priority** to the port based on the attributes dispatched from the RADIUS server. 10. Support dynamic VLAN assignment by VLAN Name 11. Support max. **3** Radius Server	RFC3580	R4.00
Web-based Access Control (WAC)	1. Support local/RADIUS database - Maximum **TBD** MACs per port when using local database - Maximum **TBD** MACs per device when using local database - Maximum **TBD** MACs per port when using RADIUS database - Maximum **TBD** MACs per device when using RADIUS database 2. Support logout and logout timer functions 3. Support Port-based authentication 4. Support Host-based authentication 5. Identity driven policy assignment: Can assign **VLAN, ingress/egress bandwidth control, ACL and 802.1p default priority** to the port according to the attributes dispatched from RADIUS server. 6. WAC 2.0 - Support HTTPS - Detailed port auth_state description		R5.00
	7. Support IPv6 address		TBD

MAC-based Access Control (MAC)	1. Support local/RADIUS database - Maximum **128** MACs per port when using local database - Maximum **128** MACs per device when using local database - Maximum **512** MACs per port when using RADIUS database - Maximum **512** MACs per device when using RADIUS database 2. Support Port-based authentication 3. Support Host-based authentication 4. Identity driven policy assignment: Can assign **VLAN, ingress/egress bandwidth control, ACL and 802.1p default priority** to the port according to the attributes dispatched from RADIUS server.		R4.00
Guest VLAN	Support following authentication methods: - 802.1X - MAC-based Access Control		R4.00
Microsoft® NAP	1. Support IPv4 2. Support 802.1X NAP 3. Support DHCP NAP		R4.00
	4. Support IPv6		R5.00
Authentication for Mgmt. Access	Support following authentication methods: - Local database - RADIUS - TACACS - XTACAS - TACACS+		R4.00
RADIUS	1.Support IPv4 RADIUS Server	RFC2138, 2139, 2865, 2618	R4.00
	2. Support IPv6 RADIUS Server		R5.00
TACACS		RFC1492	R4.00
XTACACS			R4.00
TACACS+		draft-grant-tacacs-02.txt	R4.00
RADIUS Accounting	1. Support Network accounting (for 802.1x user) 2. Support EXEC accounting (for Mgm Access) 3. Support System accounting (for Mgm Access)	RFC2866	R4.00
User Account Privilege for Mgmt Access	Support **4** level user account - User: allowed to execute 'show' and some troubleshooting commands (like ping) - Power user: allowed to execute all commands except the ones related to account management and service (telnet/SSH/Web/SNMP/RMON/sFlow etc.) enablement/disablement. - Operator: allowed to execute all commands except the ones related to account management - Administrator: can execute all switch commands.		R4.00
Authentication Database failover	Allows to configure the switch to check local database or bypass authentication when configured RADIUS server fails - Support 802.1X, MAC		R4.00
	Allows to configure the switch to check local database or bypass authentication when configured RADIUS server fails - Support WAC		R5.00
Trusted Host	1. Support up to **10** trusted host IPv4 ranges 2. Be able to enable trusted host by application - Telnet - SNMP - HTTP - HTTPS - SSH		R4.00

	- Ping		
	2. Support up to **10** trusted host IPv6 ranges		R5.00
OAM			
Non-volatile configuration	The updated configuration will be automatically reloaded after system cold/warm restart		R4.00
Factory Reset	Support factory reset function; reset the system to its default configuration		R4.00
Loopback Diagnostics	Support loopback detection/diagnostics on the link and physical layers of each switch network interface		R4.00
Cable Diagnostics	Support cable diagnostic function to check the status of connected RJ-45 cables.		R4.00
802.3ah Ethernet Link OAM	1. Support 802.3ah link layer remote loopback and discovery 2. 802.3ah D-Link extension: D-link Unidirectional Link Detection (DULD) 3. Support following dying gasp PDUs and traps: - Power failure - Device reboot	IEEE 802.3ah	R4.00
Connectivity Fault Management (CFM)	1.Support 802.1ag 2. Support up to 8 MD, **64** MIPs and **64** MEPs 3. Support following functions for customer levels: - Per port and per VLAN basis MIP and MEP - LinkTrace and loopback reply for each MIP - Loopback Message (LBM) function that can generate LBM toward broadband access network - Loopback reply (LBR) function towards its peer MEP(s), in response to a unicast or multicast LBM 4. Support following functions for operator levels: - Per port and per VLAN basis MIP and MEP - Linktrace and loopback reply for each MIP - Be able to receive a LBM from its peer MEPs and initiate the associated LBR, for the MEP on the network interface - Be able to receive a LinkTrace Message (LTM) from its peer MEP and initiate the associated LinkTrace Reply (LTR) for the MEP on the network interface - Be able to receive a Continuity Check Message (CCM) from its peer MEPs and initiate the CCM, for the MEP on the network interface - Be able to initiate the LBM, LTM and CCM on a per-network interface/per-VLAN basis	IEEE 802.1ag	R4.00
Y.1731 Ethernet OAM	Support following Y.1731 functions - Continuity Check Message (CCM) - Unicast/Multicast Loopback Message (LBM), Loopback Reply (LBR) - Link Trace Message (LTM), LinkTrace Reply (LTR)	ITU Y.1731	R5.00
Optical Transceiver Digital Diagnostic Monitoring (DDM)	1. Comply with SFF-8472 real time access to optical transceiver operating parameters 2. Support configurable warning and auto shut down threshold for following events - Internally measured transceiver temperature - Internally measured transceiver supply voltage - Measured TX bias current in uA - Measured TX output power in mW - Measured RX received optical power in mW 3. Support trap/log for both thresholds	SFF-8472	R4.00
Port Status Monitoring	Support the following port status display functions - Administration and operation status - Source MAC address information, - Display Tx/Rx traffic counter		R4.00

	- The link state, full duplex or half duplex communication mode, and automatic negotiation function enabled or disabled		
Device Status Monitoring	Support the following equipment status display functions - Plug-in module status - System loading display (CPU, Memory, Fan, power…), CPU utilization ratio and memory usage ratio - System Resource display (Scheduling, Queue, Policy....)		R4.00
Traffic Monitoring	1. Support the following traffic information display functions on a per-VLAN basis. - Packet count - Byte count - Byte distribution of ingress subscriber interfaces - Broadcast, multicast and unicast count - Transmission rate of ingress subscriber interface		R4.00
IGMP Statistics	Support IGMP statistics, including: - IGMP join, IGMP leave, and current number of active multicast groups per port and per ISM VLAN - Current number of active join ports per multicast group		R4.00
Switch Performance Monitoring	1. Support following performance monitoring: - Error/Unknown packets - Discarded packets - Unicast/Multicast/ Broadcast packets - CPU utilization ratio and memory usage ratio		R4.00
	2. The monitoring interval of performance counters can be set between 15 minutes to 24 hours. The monitoring counters can be used to provide the performance information of network interfaces. 3. Support minimum granularity 30secs for 15-minutes, 30-mins for 24-hour counter 4. Use local database to store the historical performance data 5. Be able to configure the warning threshold so as to trigger the performance event traps		TBD
Green			
Advanced Power Saving	1. Power saving by Time-based PoE - PoE ports can be turned on/off by port or system through schedule or admin control (enable/disable forever)		R4.00
	2. Power Saving by LED Shut-Off: - Powered LEDs can be turned on/off by per system based through schedule or admin control (enable/disable forever). 3. Power Saving by Port Shut-Off: - Each port on the system can be turned on/off by schedule or admin control (enable/disable forever) 4. Power Saving by System Hibernation: - System enters hibernation by schedule via GUI or command. In this mode, switches get most power-saving figures since main chipsets (both MAC and PHY) are disabled for all ports, and energy required to power the CPU is minimal. The port can be turned on via command console or pull-out/pull-in power cord		R5.00
IPv6			
IPv6 Neighbor Discovery		RFC2461, 4861	R4.00
Default Route			R4.00
ICMPv6	Include IPv6 Ping and IPv6 traceroute		R4.00
DHCPv6 Client			R5.00
DHCPv6 Relay Agent			R5.00
IPv6 Ready Management			R4.00

IPv6 ACL/QoS			R4.00
IPv4/v6 Dual Stack		RFC2893, 4213	R4.00
DHCPv6 / NDP Snooping			R5.00
Management			
Web-based GUI	1. Compatible with following Web Browsers: - IE5.5 or later versions (IPv4) - Netscape (IPv4) - Mozilla (IPv4) - Firefox (IPv4) - Safari (IPv4) 2. Support max **8** management session simultaneously (shared with CLI)	RFC2068 RFC2616	R4.00
	3. Compatible with following Web Browsers: - IE5.5 or later versions (IPv6) - Netscape (IPv6) - Mozilla (IPv6) - Firefox (IPv6) - Safari (IPv6) - Chrome (IPv4/v6)		R5.00
CLI	1. Support Multiple Commands in one line 2. Support max **8** management session simultaneously (shared with Web-based GUI)		R4.00
Telnet Server	1.Support IPv4 2.Support **8** management session simultaneously	RFC854	R4.00
	Support IPv6		R5.00
Telnet Client	Support IPv4		R4.00
	Support IPv6		TBD
TFTP client	1. Support IPv4 2. Pre-config TFTP Setting	RFC783 RFC1350	R4.00
	Support IPv6		R5.00
FTP client	1.Support IPv4		R4.00
	2.Support IPv6		R5.00
Remote Copy Protocol (RCP)	1.Support IPv4/v6 address		R5.00
ZModem			R4.00
Command logging	Command logging with account message		R4.00
Greeting Message	Support 24 lines, each line support 80 bytes		R4.00
Debug Command	Support “Show tech support”		R4.00
SNMP	SNMP v1/v2c/v3	RFC1157, 1901, 1908, 2570, 2574, 2575, 3411-17	R4.00
	SNMP over IPv6		R5.00
SNMP Trap	SNMP supports following trap events: - New MAC Notification - Power and fan errors/recovery - Cold / Warm start-up - Link state change - STP state change - SNMP authentication failure - Mgm access violation - IP-MAC-Port Binding access violation - Port Security violation - Loopback occurring and recovery		R4.00

	- DHCP Server Screening - Gratuitous ARP - While the firmware upgrade via SNMP finishesb		
System Log	1. Support IPv4 log server 2. Support WAC/MAC log information 3. Support the log for storm control block mode 4. Support Max **4** Management Host	RFC3164 RFC3195	R4.00
	5. Support IPv6 log server		R5.00
Trap/ Alarm/ Log Severity Control	1. Be able to divide the events into **3** severity levels and trigger corresponding logging activities based on the defined severity levels. 2. Support **8-level** severity log		R4.00
SMTP	1. Transmitting critical events to an e-mail address 2. Support IPv4 address 3. Support the following events - System start(reboot) - Port link up or link down - SNMP Authentication Failure - Config or log saving by user - Config reset by user - TFTP update fw status	RFC2821	R4.00
	4. Support IPv6 address		R5.00
RMON v1	1.Support **4** groups	RFC2819	R4.00
	2.Support IPv6 Address		TBD
RMON v2	1.Support Probeconfig group		R4.00
	2.Support IPv6 Address		TBD
LLDP	1.Support 802.1AB		R4.00
	2.LLDP-MED(Media Endpoint Discovery)		R5.00
BootP/DHCP client	1. Support IPv4 Address	RFC951 RFC1542 RFC2131	R4.00
	2. Support IPv6 Address		TBD
DHCP Auto-configuration			R4.00
DHCP relay	1. Support IPv4 DHCP relay 2. Support keep, replace and drop action for option82 field in IPv4 DHCP relay 3. Support DHCP Relay option 82		R4.00
	4. Support DHCP local relay function that can insert option 82 5. Support keep, replace and drop action for option82 field in IPv4 DHCP local relay	RFC3046	R4.00
	6. Support DHCP Relay Per VLAN		R4.00
	7. Support IPv6 DHCP relay(support Basic DHCPv6 Relay functions only)		R5.00
	8. Support IPv6 DHCP Local relay(TBD)		R5.00
DHCP option 12			R4.00
PPPoE Circuit Insertion	Insert/delete Circuit ID tag to/from PPPoE packet		R4.00
Flash file system			R4.00
Port Description			R4.00
Editable Login Banner			R4.00

Comment [Allan3]: Why bold face

Editable System Prompt			R4.00
CPU Monitoring	Be able to monitor the utilization of CPU via Web/ CLI/ SNMP		R4.00
Memory Monitoring	Be able to monitor the utilization of Memory via Web/ CLI/ SNMP		R4.00
DNS Relay	Support attributes: - IP, Domain (relay-only, static, cache mode)		R5.00
	- MX, NS, CNAME, AAAA, TXT, SOA, ANY (relay-only)		R5.00
Debug Command	Support “Show tech support”		R4.00
Time Setting	1. SNTP IPv4 2. Support max **2** SNTP Server	RFC1769	R4.00
	3. SNTP IPv6	RFC 2030	R5.00
Password Recovery	1. Support enable/disable password recovery function 2. CLI Command for password recovery		R4.00
ICMPv6			R4.00
Password Encryption			R4.00
MTU Setting	Allow the ability to modify MTU settings	RFC1191	R5.00
Microsoft® NLB (Network Load Balancing) Support	1. Used to support Microsoft server load balancing application where multiple servers can share the same IP and MAC address. The request from clients will be forwarded to all servers, but will only be processed by one of them. 2. Support IPv4 NLB		R4.00
	3. Support IPv6 NLB		TBD
Ping	Support IPv4/v6 ping		R4.00
Traceroute	1. Support IPv4		R4.00
	2. Support IPv6		R4.00
Multiple IP Interface	Multiple IP Interface support for debug usage via ping/traceroute/telnet/SSH/WEB/TFTP		R4.00
Standard MIB			
MIB Structure		RFC1065, 1066, 1155, 1156, 2578	R4.00
Concise MIB Definitions		RFC1212	R4.00
MIBII		RFC1213	R4.00
MIB Traps Convention		RFC1215	R4.00
Bridge MIB		RFC1493,4188	R4.00
SNMP MIB		RFC1157, 2571-2576	R4.00
SNMPv2 MIB		RFC 1901-1908, 3418, 3636, 1442, 2578	R4.00
RMON MIB		RFC271, 1757, 2819	R4.00
RMONv2 MIB		RFC2021	R4.00
Ether-like MIB		RFC1398, 1643, 1650, 2358, 2665, 3635	R4.00
802.3 MAU MIB		RFC2668	R4.00
802.1p MIB		RFC2674,4363	R4.00

IF MIB		RFC2233, 2863	R4.00
RADIUS Authentication Client MIB		RFC2618	R4.00
MIB for TCP		RFC4022	R4.00
MIB for UDP		RFC4113	R4.00
MIB for Diffserv.		RFC3298	R4.00
802.3 MAU MIB		RFC2668	R4.00
RADIUS Accounting Client MIB		RFC2620	R4.00
Ping & Traceroute MIB	Can configure the frequency of ping	RFC2925	R4.00
Running configuration writes and backup			R4.00
TFTP uploads and downloads			R4.00
Trap MIB			R4.00
IPv6 MIB		RFC2465	R4.00
ICMPv6 MIB		RFC2466	R4.00
Entity MIB		RFC2737	R4.00
IPv6 SNMP Mgmt Interface MIB		RFC4293	R4.00
DDM MIB			R4.00
Private MIB			R4.00
DIFFSERV MIB		RFC3289	R4.00
Entity MIB		RFC2737	R4.00
Private MIB			
D-Link Private MIB			R4.00
D-Link Zone Defense MIB			R4.00
Standard compliance			
UDP		RFC768	R4.00
IP		RFC791	R4.00
ICMP	ICMPv4	RFC792	R4.00
	ICMPv6	RFC2463, 4443	R4.00
	Extended ICMP to Support Multi-Part Messages	RFC4884	R4.00
TCP		RFC793	R4.00
ARP	1	RFC826	R4.00
CIDR		RFC1338,1519	R4.00
Definition of the DS Field in the IPv4 and IPv6 Headers		RFC2474, 3168, 3260	R4.00
Extensible Authentication Protocol (EAP)		RFC 1321, 2284, 2865, 2716, 1759, 3580, 3748	R4.00
SNMP	SNMP Framework	RFC2571	R4.00
	SNMP Message Processing and Dispatching	RFC2572	R4.00
	SNMP Applications	RFC2573	R4.00
	User-based Security Model for SNMPv3	User-based	R4.00

		Security Model for SNMPv3	
IPv6	Path MTU Discovery for IPv6	RFC1981	R4.00
	IPv6	RFC2460	R4.00
	Neighbor Discovery for IPv6	RFC2461, 4861	R4.00
	IPv6 Stateless Address Auto-configuration	RFC2462, 4862	R4.00
	IPv6 Neighbour Discovery over Ethernet and definition	RFC2464	R4.00
	IPv6 Addressing Architecture	RFC3513, 4291	R4.00
	IPv4/IPv6 dual stack function	RFC2893, 4213	R4.00
IPv6 Ready Logo	Comply with IPv6 Ready Logo phase 2		R4.00

2 Mechanical & ID design

2.1 Mechanical

2.1.1 DES-3200-28P A1

Dimension
■ 19” Metal Case □ 11” Metal Case □Others (9” Metal Case) Metal Case: 441(W) x 308(D) x 44(H) mm, 1U Rack-Mount size

2.1.2 DES-3200-52 A1

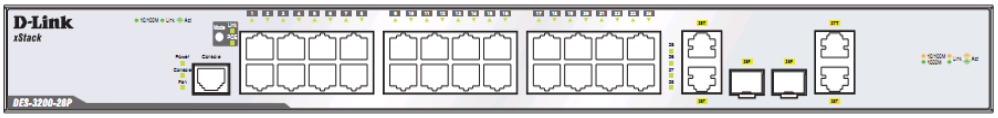
Dimension
■ 19” Metal Case □ 11” Metal Case □ Others Metal Case: 441(W) x 308(D) x 44(H) mm, 1U Rack-Mount size

2.1.3 DES-3200-52P A1

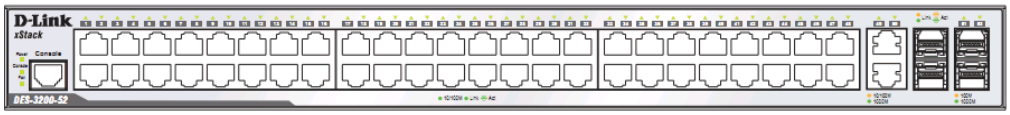
Dimension
■ 19” Metal Case □ 11” Metal Case □ Others Metal Case: 441(W) x 308(D) x 44(H) mm, 1U Rack-Mount size

2.2 ID Design

2.2.1 DES-3200-28P A1



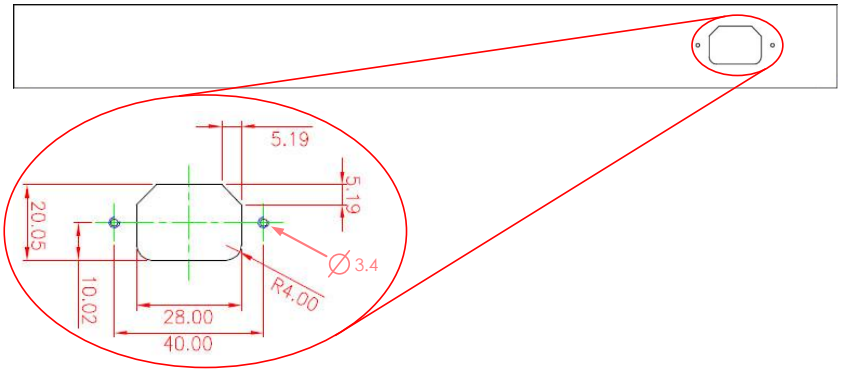
2.2.2 DES-3200-52 A1



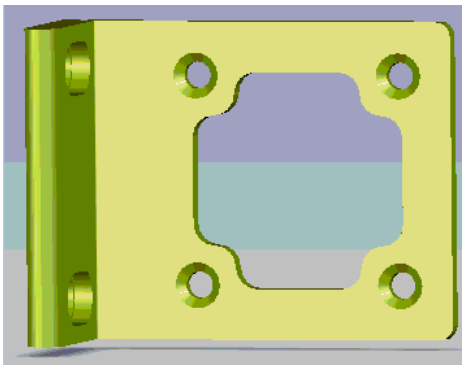
2.2.3 DES-3200-52P A1

2.3 AC Power Inlet Design

The AC power inlet must locate at right side of rear panel. Detail dimensions are as follows:



2.4 New Ear Mount Design



2.5 LED indicators

Location	LED Indicative	Color	Status	Description
Per Device	Power	Green	Solid Light	Device Power On
			Light off	Device Power Off
	Console	Green	Solid Light	Console on
			Blinking	POST is in progress
			Light off	Console off
	RPS	Green	Solid Light	RPS in using
			Blinking	When switch detects that RPS cable is connected
			Light off	RPS off
	Fan (only for devices with fan. DES-3200/28P/52/52P,	Red	Blinking	When any of the fans has failed
			Light off	When all fans work normally
	Port LED Mode Indicator	**Only for 10/100Mbps on DES-3200-28P/52P:**		
		Green	Solid Light	When 10/100 port is in Link/Act Mode

		Amber	Solid Light	When 10/100 port is in PoE Mode
LED Per 10/100 Mbps Port	Link/Act	Green	Solid Light	When there is a secure connection (or link) at any of the ports.
		Green	Blinking	When there is reception or transmission (i.e. Activity—Act) of data occurring at a port.
		Green	Light off	No link
	PoE Mode	Green	Solid Light	Power feeding
		Green	Blinking	Error Condition
		Off	Light off	No Power feeding
LED Per 10/100/1000 Mbps Port	Link/Act/Speed	Green	Solid Light	When there is a secure 1000Mbps connection at the port.
			Blinking	When there is reception or transmission occurring at the port.
		Amber	Solid Light	When there is a secure 10/100Mbps connection at the port.
			Blinking	When there is reception or transmission occurring at the port.
		off	Light off	No link
LED Per 100/1000 SFP Port	Link/Act/Speed	Green	Solid Light	When there is a secure 100/1000Mbps connection at the port.
			Blinking	When there is reception or transmission occurring at the port.
		Amber	Solid Light	When there is a secure 10/100Mbps connection at the port.
			Blinking	When there is reception or transmission occurring at the port.
		off	Light off	No link

3 Certifications/Test Reports

3.1 Software Certification

NA

3.2 Surge/Lightening Protection

Support surge/lightening protection on following switch interfaces.

Interface	IEC 61000-4-5 Class						
	0	1	2	3	4	5	6
AC Power Inlet (DES-3200-/28P/52/52P)				**V (2KV/1KV)**			
DC Power Inlet (All models)				**V (2KV/1KV)**			
All Ethernet Ports (Include non-PoE,PoE,PoE+ port) **PS :PoE+ without PD attached, restart is acceptable**							1,2/50us – 8/20us____kV 10/700us__6__kV **V** 6KV

3.3 EMC/RF Certificates and Test Reports

Required	EMI/EMC Test Report	Class A	Class B	Region & Country requirements
V	CE Report (89/336/EEC(EN55022/24), 2004/108/EC)	**V**		EU
V	FCC report(FCC CFR 47 Part 15 B)	**V**		US
V	IC report(ICES-003)	**V**		Canada
	IC report(ICES-006)	**V**		Canada
V	C-Tick Report(AS/NZS CISPR 22)	**V**		New Zealand & Australia
V	VCCI Report(CISPR 22)	**V**		JAPAN
	MIC report			KOREA
	Anatel			Brazil
V	BSMI	**V**		Taiwan
	CCC			China
	Other's			

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3.4 Safety Certificates and Test Reports

Required	Certifications	Standards	Region & Country requirements
V	CE LVD report (LVD:73/23/EEC)	EN60950-1: 2001	European Union
V	UL/cUL Listed Mark	UL/CSA 60950-1	US / Canada
	CSA International Mark	IEC60950-1 UL60950-1 CSA60950-1 EN 60950-1	World US Canada European Union
V	CB Report	IEC60950-1: 2001 EN60950-1 :2001	World European Union
	Other's requirements		

3.5 Reliability Test Reports

Required	Test Items	Refer to Standards
V	MTBF of Prediction Report	Bell-core TR-332, Issue 6 or Telcordia SR-332, Issue 1

V	MTBF of Endurance test Report	D-Link SPEC
Optional	MTBF of Demonstration test Report	D-Link SPEC
V	Free Fall(Drop)Test Report	IEC 60068-2-32
V	Random Vibration Test Report	IEC 60068-2-34: 1973
V	Storage Test Report	IEC 60068-2-48
V	Operation Cold(low temperature) Test	IEC 60068-2-1
V	Operation Dry Heat(High temperature) Test	IEC 60068-2-2
V	Operation Temperature Cycles Test	IEC 60068-2-14
V	Thermal Shock Test	IEC 60068-2-14
V	Damp Heat Steady State test	IEC 60068-2-78
V	Thermal Profile Test	D-Link SPEC
V	ESD Simulation Test report	IEC 61000-4-2 Air Discharge: ±8KV Contact Discharge: ±4KV
V	High / Low Temperature Start Test	D-Link SPEC
V	Parts on/off & Insert/pulling Test	D-Link SPEC
V	Acoustic Noise test	EN 27779 & ISO 7779

3.6 RoHS Requirement

3.6.1 **Level A of Substance limitation requirements table (for appliances & accessories)**

Level	D-Link No.	Description		Limitation/ ppm
A	**A1**	鎘及其化合物	Cadmium/ Cadmium Compounds	**80**
	A2	六價鉻及其化合物	Hexavalent Chromium/ Hexavalent Chromium Compounds	**800**
	A3	鉛及其化合物	Lead/ Lead Compounds	**800**
	A4	汞及其化合物	Mercury/ Mercury Compounds	**800**
	A5	聚溴聯苯	Polybrominated Biphenyls (PBBs)	**800**
	A6	聚溴聯苯醚	Polybrominated Diphenylethers (PBDEs)	**800**

3.6.2 **Level A of Substance limitation requirements table (for Packing)**

Level	D-Link No.	Description		Limitation/ ppm
A	**A1 ~ A4**	鎘, 六價鉻, 鉛, 汞	Cadmium Chromium VI, Lead and Mercury compounds	**100**

3.6.3 **Level A of Substance limitation requirements table (for battery)**

Level	D-Link No.	Description		Limitation/ ppm
A	**A1**	鎘及其化合物	Cadmium/ Cadmium Compounds(Cd)	**2500 (0.025%)**
	A3	鉛及其化合物	Lead/ Lead Compounds(Pd)	**400 (0.4%)**
	A4	汞及其化合物	Mercury/ Mercury Compounds(Hg)	**5**